

Oral History Program: Biographical Notes

Thomas M. O'DONNELL (1913 - 1996)

Biomedical Engineer

- Birth & Family:** Born in 16 May 1913, an only child. Father born in Limerick, Ireland, in 1882; mother born in Gladesville, NSW, in 1881. Before marriage, mother was a buyer for McKittricks, one of the larger stores in South Grafton; father was Postmaster at South Grafton and later became a Bank Manager for Government Savings Bank of New South Wales.
- Married; 3 sons, Vincent, Laurence and Geoffrey, and daughter Catherine.
- Education:** St Mel's Convent Campsie, then St Joseph's Convent, Cessnock, then Holy Cross College, Ryde. Schooling completed in 1929.
- Qualifications:** B.O.C.P. (Broadcast Operator's Certificate of Proficiency)
- Memberships:** FIEAust, Wireless Institute of Australia (WIA), Australian Federation for Medical and Biological Engineering, NSW Society for Medical and Biological Engineering
- Awards:** MBE for work done in the field of Medical Technology 28 September 1979, presented by Sir Roden Cutler.
- Work History:** Tom O'Donnell inherited his interest in radio from his father who had been a telegraphist/postmaster. At 17 years of age he gained his amateur radio licence (Amateur Operator's Certificate of Proficiency) and in 1929, at the end of his schooling, he returned to his parents' home in Cessnock and set up his own business repairing radio sets.
- Later, O'Donnell began working for the Zenith Radio Company at Woolloomooloo - primarily to learn how broadcast radio receivers were made. He also had an interest in commercial radio from the manufacturing side and was later employed by Price's Radio which had a shop/showroom in Angel Place, Sydney; working from Randwick under a Mr Parker, O'Donnell made custom-built radio receivers with aluminium chassis, and assembled and wired all components.
- O'Donnell was also interested in radio communication in underground mines and suggested to Chris Cowan (call sign VK2PZ) that they conduct a test of communications in the mines; he believed that this was the first attempt to do so. The object was to communicate along the galleries up to the workface, and from down below to an outside place either at the top of the mine or further away. Wires were unsatisfactory because they were easily broken in the event of an explosion or something similar, resulting in entombed miners losing communication with the outside world.
- After receiving permission from the Mine Manager of Aberdare Extended and other appropriate authorities, O'Donnell and his party succeeded in communicating along the galleries (about 300 meters below ground) with satisfactory signals using a wavelength of 40 metres (7 megahertz band). However, although they could receive signals underground from a transmitter 5 miles away above ground, the surface station could not hear them, due (O'Donnell believed) to the low power and simple

antenna of the underground transmitter. Their report to the Mine Management was that while they were successful talking along a gallery, this might not apply to talking between galleries which for safety reasons could be separated by a considerable distance. This test was regarded as being very innovative at the time and O'Donnell believed they were pioneers in underground radio communication.

Moving back to Sydney in 1932, O'Donnell studied for a Broadcast Operator's Certificate of Proficiency - a commercial licence - at the same time working as a Radio Technician and Assistant in Sales for Blackwood's Radio and Furniture Emporium in Marrickville. His next position was as a Technician with the Engineering Branch, Broadcasting Division, National Broadcasting Service of the P.M.G's Department, which amongst other duties involved working with transmitters in the city and country.

This led to O'Donnell joining the A.B.C. (Australian Broadcasting Commission), where he became a Technician in the field of broadcast studio control. As well as assisting in the running of the studio, he also assisted in operating the Radio Australia propaganda broadcast to nearby countries and monitored broadcasts coming in from Western Australia, at one stage reporting on jamming of broadcasts by Japanese signals originating from Perth; this was before Japanese entry into the Second World War.

During 1946 O'Donnell and 3 others were sent to Canberra to carry out control room work, recording and other duties necessary to bring the broadcasting of Parliament to the public. O'Donnell installed the recording facilities in the basement, and succeeded in getting portable equipment up and running. After the experimental introduction, transmission of Parliament began on a regular basis.

O'Donnell transferred from the A.B.C. to the Commonwealth Department of Health Acoustics Laboratory, where it was his responsibility to analyse the frequency response of the commercially available hearing aids to determine whether they had peculiar acoustic output qualities. He also was responsible for setting up test procedures and developing evaluation apparatus to determine whether airline pilots who wished to join Australian domestic air services were suffering from any post-war effects on their hearing.

In 1949 O'Donnell's background in acoustics and engineering resulted in his obtaining a position with Royal Prince Alfred Hospital which involved helping to set up a laboratory for what was later to be known as the Department of Neuro Physiology, in which lab personnel needed to be able to service, maintain, design and alter electro-encephalograph and other similar equipment.

In 1958 he was seconded to the Royal Perth Hospital to oversee the installation and operation of the first EEG equipment. During the course of his career, he was invited to look after medical diagnostic equipment in other institutions such as Royal Alexandra Hospital for Children, John Northcott Neurological Centre at Cammeray, the Spastic Centre at Mosman, the Royal North Shore Hospital. He also conducted private work for Dr. Leonard Rail, Senior Electro-Encephalographer in NSW.

O'Donnell regarded his most important achievements in 30 years at RPA as being the development of the standard EEG electrode and the development of the photic stimulator. He retired in 1978, and died on 25 June 1996.